

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE
BOARD OF PATENT APPEALS AND INTERFERENCES**

Application No.: 10/674,914

Filing Date: September 30, 2003

Applicant: Bevil J. Hogg

Group Art Unit: 3736

Examiner: Huong Q. Nguyen

Title: Method and Apparatus for Improved Surgical
Navigation Employing Electronic Identification with
Automatically Actuated Flexible Medical Devices

Attorney Docket: 5236-000452

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY BRIEF

Sir:

In response to each of the grounds for rejection noted in the Examiner's Answer, the Appellant submits this Reply Brief and states as follows:

1. 1st GROUND OF REJECTION ON APPEAL

Pursuant to 37 C.F.R. § 41.37(c)(1)(vii), the following provides the contentions of appellants with respect to the 1st ground of rejection above presented for review in accordance with 37 C.F.R. § 41.37(c)(1)(vi).

Claims 1 and 52 are not obvious because the combination of *Osadchy* (U.S. Patent No. 6,266,551) and *Stereotaxis* (WO 00/07641) would not produce the claimed device, and there is no reason why an artisan would have modified *Osadchy*'s teaching of a calibration correction of a difference between the computed and known tip position, in a manner that would result in a device that stores the number of magnetically responsive elements and spacing therebetween.

The Examiner's Answer states (on p. 4, ¶ 4, p. 8, ¶ 18) that *Osadchy* discloses a catheter with electronic information on physical properties of the device including the number of magnetically responsive elements 60, 62, 64 and spacing therebetween (dy and dz), where the number of magnetically responsive elements and spacing are used to determine calibration correction data to enable proper determination of tip location. However, *Osadchy* only discloses a catheter with a position signal generating device 28 and a computer that applies a correction to "position and orientation signals generated by device 28, in order to determine the actual, correct position of tip 26." (*Osadchy*, c. 15, ll. 65-67).

Osadchy merely states that a distance L, from a coil 62 to a tip 26, "typically varies from one catheter to another, leading to errors in calculating the position of the tip" (*Osadchy*, col. 12, ll. 3-6). Thus, *Osadchy* teaches determining calibration correction data where "The differences between the computed and

known values of position and orientation are used to calculate an empirical displacement correction vector D" (Osadchy, col. 15, ll. 52-58), which calibration correction "is thereafter stored electronically in a memory device...in catheter 20." (Osadchy, col. 16, ll. 26-30).

Thus, instead of storing the number of magnetically responsive elements and spacing therebetween, *Osadchy* teaches storing a correction representing a difference between the computed and known tip position, so that "When catheter 20 is subsequently used inside a human body, computer 36 applies these correction vectors...in order to determine the actual, correct position of the tip." (Osadchy, col. 15, ll. 64-67).

Accordingly, even if one skilled in the art had combined the *Stereotaxis* system with *Osadchy*'s teaching of a correction representing a difference between the computed and known tip position, it would not have resulted in a system that provides actuation instructions that take into account stored information of the number of magnetically responsive elements and spacing.

As the Supreme Court said, there must be an apparent reason to combine known elements in the references in a manner that would result in the fashion claimed by the patent application. *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (U.S., 2007). The Examiner has not articulated a sufficient reason why one skilled in the art would have modified *Osadchy*'s teaching to store a calibration correction of the difference between a computed and known tip position, to arrive at the presently claimed invention of stored information including the number of magnetically responsive elements and spacing therebetween. Thus, the Appellants submit that claims 1 and 52 are not obvious.

2. 2nd GROUND OF REJECTION ON APPEAL

Pursuant to 37 C.F.R. § 41.37(c)(1)(vii), the following provides the contentions of appellants with respect to the 2nd ground of rejection above presented for review in accordance with 37 C.F.R. § 41.37(c)(1)(vi).

With regard to claim 10, this claim depends from claim 1, which Appellants believe to be allowable in view of the above remarks. As such, the Appellants submit that claim 10 is also allowable for at least these reasons.

3. 3rd GROUND OF REJECTION ON APPEAL

Pursuant to 37 C.F.R. § 41.37(c)(1)(vii), the following provides the contentions of appellants with respect to the 3rd ground of rejection above presented for review in accordance with 37 C.F.R. § 41.37(c)(1)(vi).

Claim 38

Claim 38 is not obvious because the combination of *Osadchy* (U.S. Pat. No. 6,266,551), *Garibaldi* (U.S. Pat. No. 6,401,723) and *Stereotaxis* (WO 00/07641) would not produce the claimed device, and there is no reason why an artisan would modify *Osadchy*'s teaching of a calibration difference between a computed and known tip position and *Garibaldi*'s teaching of coil-wire cross-section in a manner that would result in a device that stores information including cross-sectional area and elastic properties of the device.

Claim 38 requires a memory on the flexible medical device that includes information on the physical and geometric properties of the device, including one or more cross-sectional areas of the elongate device and an elastic property of the elongate device that are relevant to navigational control of the device. The combination of references do not teach the claimed cross-sectional area of the elongate device and an elastic property of the elongate device.

The Examiner's Answer states on page 11 that *Garibaldi* teaches that cross-sectional area of coil wire of an analogous elongate medical device is directly proportional to magnetic moment. From this, the Examiner concludes that *Garibaldi* teaches the cross-sectional area of the elongate medical device, and that it would have been obvious to modify *Stereotaxis* to use a cross-sectional area of the elongate device as taught by *Garibaldi*.

However, *Garibaldi* only discloses cross-sectional area of a small 0.025 mm coilwire that forms a coil within the distal end portion of a medical device (col. 4, ll. 39-42), but does not disclose anything about the cross-sectional area or elastic property of the medical device itself, which would be relevant to navigational control of the device.

Contrary to *Garibaldi*, the Appellant's claimed device does not include a current conducting coilwire. Rather, claim 38 requires a memory with information including the cross-sectional area and elastic property of the elongate medical device. The Examiners Answer contends (on p. 11) that *Osadchy* discloses a catheter system comprising a memory device 90 on a medical device 20 that includes information on the physical and geometric properties of the medical device, i.e. the position and orientation of the distal tip 26 relative to coils.

However, as stated above, *Osadchy* does not teach storing the distance L from a coil 62 to a tip 26 on a memory of the device. Rather, *Osadchy* states that "The differences between the computed and known values of position and orientation are used to calculate an empirical displacement correction vector D" (*Osadchy*, col. 15, ll. 52-58), which calibration correction "is thereafter stored electronically in a memory device...in catheter 20." (*Osadchy*, col. 16, ll. 26-31).

Thus, instead of storing information including a cross-sectional area and an elastic property of the elongate device that are relevant to navigational control of the device, *Osadchy* teaches storing a correction difference between the computed and known tip position, so that "When catheter 20 is subsequently used inside a human body, computer 36 applies these correction vectors...in order to determine the actual, correct position of the tip." (col. 15, ll. 64-67).

Accordingly, even if one skilled in the art had combined the *Stereotaxis* system with *Osadchy*'s teaching of a correction representing a difference between the computed and known tip position, it would not have resulted in a system that provides actuation instructions that take into account stored information including the cross-sectional area and elastic property of the device.

As the Supreme Court said, there must be an apparent reason to combine known elements in the references in a manner that would result in the fashion claimed by the patent application. *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (U.S., 2007). The Examiner has not articulated a sufficient reason why one skilled in the art would have modified *Osadchy*'s teaching to store a calibration correction of the difference between a computed and known tip position, to arrive at the presently claimed stored information a cross-sectional area and an elastic property of the elongate device that are relevant to navigational control of the device. As such, the Appellants submit that it would not have been obvious to a person of ordinary skill to modify *Garibaldi* and *Osadchy*'s teachings according to known methods in a manner that would have predictably resulted in a medical device as in claim 38 having stored information including a cross-sectional area and elastic properties of the device.

Claims 39-40

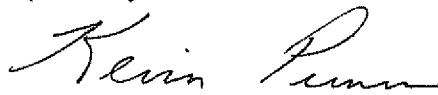
With regard to claims 39-40, these claims ultimately depend from claim 38, which Appellants believe to be allowable in view of the above remarks. As such, the Appellants submit that claims 39-40 are also allowable for at least these reasons.

CONCLUSION

In view of the above arguments, the Appellant submits that the presently rejected claims are not obvious, and reversal of the present rejections is respectfully requested.

Respectfully submitted,

Date: October 20, 2009



Kevin M. Pumm, Reg. No. 49,046
Harness, Dickey & Pierce, P.L.C.
7700 Bonhomme Avenue, Suite 400
St. Louis, MO 63105
(314) 726-7500

CERTIFICATE OF TRANSMITTAL

I certify that on October 20, 2009, APPLICANTS' REPLY BRIEF was electronically filed with the U.S. Patent and Trademark Office, address to Commissioner for Patents, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450.



Kevin M. Pumm, Reg. No. 49,046

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